

ABSTRACT

To provide a Cu-based amorphous alloy having a glass-forming ability higher than that of a Cu-Zr-Ti amorphous alloy and a Cu-Hf-Ti amorphous alloy, as well as excellent workability and excellent mechanical properties without containing large amounts of Ti.

A Cu-based amorphous alloy characterized by containing 90 percent by volume or more of amorphous phase having a composition represented by Formula: $\text{Cu}_{100-a-b}(\text{Zr}, \text{Hf})_a(\text{Al}, \text{Ga})_b$ [in Formula, a and b are on an atomic percent basis and satisfy atomic percent $\leq a \leq 50$ atomic percent and 2 atomic percent $\leq b \leq 10$ atomic percent], wherein the temperature interval ΔT_x of supercooled liquid region is 45 K or more, the temperature interval being represented by Formula $\Delta T_x = T_x - T_g$ (where T_x represents a crystallization initiation temperature and T_g represents a glass transition temperature.), a rod or a sheet having a diameter or thickness of 1 mm or more and a volume fraction of amorphous phase of 90% or more can be produced by a metal mold casting method, the compressive strength is 1,900 MPa or more, the Young's modulus is 100 GPa or more, and the Vickers hardness is 500 Hv or more.